

# PATENT COOPERATION TREATY

WO 00/32612  
PCT/EP99/08968

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From the INTERNATIONAL BUREAU

PCT

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

CIBA SPECIALTY CHEMICALS HOLDING INC.

Patentabteilung  
Klybeckstrasse  
CH-4057 Basel  
SUISSE

Reception P/TM/S/ LE 5		
15. Juni 2000		
PAT A	PAT B	RES
✓	W	W

Date of mailing (day/month/year) 08 June 2000 (08.06.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference A-21884/A			
International application No. PCT/EP99/08968 ✓	International filing date (day/month/year) 20 November 1999 (20.11.99)	Priority date (day/month/year) 30 November 1998 (30.11.98)	
Applicant CIBA SPECIALTY CHEMICALS HOLDING INC. et al ✓ (=CH/31)			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,CN,JP,KP,KR,MA,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,GE, GH,GM,HR,HU,ID,IL,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA, PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).
3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 08 June 2000 (08.06.00) under No. WO 00/32612

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer J. Zahra Telephone No. (41-22) 338.83.38
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## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 06 July 2000 (06.07.00)	
<b>International application No.</b> PCT/EP99/08968	<b>Applicant's or agent's file reference</b> A-21884/A
<b>International filing date (day/month/year)</b> 20 November 1999 (20.11.99)	<b>Priority date (day/month/year)</b> 30 November 1998 (30.11.98)
<b>Applicant</b> LEPPARD, David, George et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

30 May 2000 (30.05.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).



<p>The International Bureau of WIPO          34, chemin des Colombettes          1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer          S. Mafla</p> <p>Telephone No.: (41-22) 338.83.38</p>
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A-21884/A	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/08968	International filing date (day/month/year) 20/11/1999	Priority date (day/month/year) 30/11/1998
International Patent Classification (IPC) or national classification and IPC C07F9/50		
Applicant CIBA SPECIALTY CHEMICALS HOLDING INC. et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 1 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the report</li><li>II <input type="checkbox"/> Priority</li><li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input type="checkbox"/> Certain defects in the international application</li><li>VIII <input type="checkbox"/> Certain observations on the international application</li></ul>		
Date of submission of the demand  30/05/2000	Date of completion of this report  06.03.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  McDonald, C  Telephone No. +49 89 2399 2905 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP99/08968

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

**Description, pages:**

1-20 as originally filed

**Claims, No.:**

1-15 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☒ the claims, Nos.: 16  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP99/08968

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 1-15
	No: Claims
Inventive step (IS)	Yes: Claims 1-15
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-15
	No: Claims

**2. Citations and explanations  
see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP99/08968

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: EP-A-0 040 721 (BASF AG) 2 December 1981 (1981-12-02) cited in the application
- D2: BANERJEE S ET AL: 'SYNTHESIS OF A POLY(TEREPHTHALOYLPHOSPHINE)' ANGEWANDTE MAKROMOLEKULARE CHEMIE. APPLIED MACROMOLECULAR CHEMISTRY AND PHYSICS, DE, WILEY VCH, WEINHEIM, vol. 199, 1 August 1992 (1992-08-01), pages 1-6, XP000293980 ISSN: 0003-3146 cited in the application
- D3: GB-A-2 259 704 (CIBA-GEIGY AG) 24 March 1993 (1993-03-24) cited in the application
- D4: CASEY C.P.: 'Synthesis of endo,endo-2,5-Bis((diphenylphosphino)methyl)bicyclo (2.2.1)heptane, a chelating diphosphine with a natural bite angle of 120°' JOURNAL OF ORGANIC CHEMISTRY., vol. 55, no. 4, - 16 February 1990 (1990-02-16) pages 1394-1396, XP002130765 AMERICAN CHEMICAL SOCIETY. EASTON., US ISSN: 0022-3263
- D5: WO 96 07662 A (CIBA-GEIGY AG) 14 March 1996 (1996-03-14)

**1) Novelty - Art. 33 (1) and (2) PCT:**

Claims 1-15 are new, as a process for the preparation of the known acylphosphine compounds, involving reacting organic **phosphorus halides** of the defined formula (II) of Claim 1 with an **alkali metal** or magnesium in combination with lithium, and a subsequent reaction with acid halides of the defined formula (III), without the isolation of the intermediates, is not known from the available prior art. The subject-matter of Claims 1-15 therefore fulfils the requirements of Article 33(2) PCT.

**2) Inventive Step - Art. 33 (1) and (3) PCT:**

Document D1, which is considered to represent the most relevant state of the art,

discloses acylphosphine compounds of the type  $R^1R^2PC(O)R^3$ , and the process for their preparation, wherein acid halides, particularly acid chlorides, corresponding to those of the defined formula (III) of Claim 1, are reacted with lithiated phosphide compounds  $R^1R^2PMe$  ( $Me = Li$ ) under an inert atmosphere at temperatures between  $-10^\circ$  and  $100^\circ C$  (p. 6), yielding the product compounds without the isolation of the intermediates. Example 3 discloses the reaction of diphenylphosphine with  $n-BuLi$  to form lithiumdiphenylphosphine, and the subsequent reaction with 2,6-dimethoxybenzoylchloride, to give a product yield of 82.5% (p. 16 lines 1-29). The subject-matter of Claim 1 differs in that the reaction process involves the reaction of organic phosphorus halides with an alkali metal or magnesium in combination with lithium to form the organophosphorus lithium compound used to react with the acid chloride.

The problem to be solved by the present invention may therefore be regarded as the provision of an alternative process for the preparation of acylphosphines.

D2 discloses the reaction of P,P-dichloro(phenyl)phosphine with lithium metal in dry THF to yield P,P-dilithio(phenyl)phosphine (p. 2), which corresponds to step (1) of the process as claimed in Claim 1. However, it states on p. 3 of D2, in the paragraph following the reaction scheme, that the P,P-dilithio(phenyl)phosphine is extremely reactive, and is not isolated due to its instability and decomposition, introducing an element of error of stoichiometry in any subsequent reaction, which is reflected in the poorer quality of the final product obtained. That the process of the present application can proceed without the isolation of the intermediate P,P-dilithio(phenyl)phosphine compound formed in the first step of the process, and still achieves high and efficient final product yields (e.g. 90.8% of bis(2,4,6-trimethylbenzoyl)phenylphosphine oxide; see Example 1 on p. 14), despite the reported high instability of P,P-dilithio(phenyl)phosphine, would not be expected from the teachings of D2, and would not be obvious to the man skilled in the art. The subject-matter of Claims 1-15 therefore involves an inventive step (Article 33(3) PCT).

The documents D3-D5 are considered herein as not being relevant for the examination of the present application, as they pertain either to different target compounds or to significantly different processes for the preparation of the relevant

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP99/08968

compounds of the present application.



15. A process according to either claim 1 or claim 2, wherein, in formula I, n is 1, m is 1 or 2, R<sub>1</sub> is phenyl which is unsubstituted or substituted by C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>8</sub>alkoxy, or R<sub>1</sub> is C<sub>1</sub>-C<sub>12</sub>alkyl; R<sub>2</sub> is phenyl which is substituted by halogen, C<sub>1</sub>-C<sub>4</sub>alkoxy or C<sub>1</sub>-C<sub>4</sub>alkyl; and R<sub>3</sub> is unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl.

*Do not enter*

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>A-21884/A</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 99/ 08968</b>	International filing date (day/month/year) <b>20/11/1999</b>	(Earliest) Priority Date (day/month/year) <b>30/11/1998</b>
Applicant <b>CIBA SPECIALTY CHEMICALS HOLDING INC. et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

### 4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**PROCESS FOR PREPARING ACYLPHOSPHINES AND DERIVATIVES**

### 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

### 6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

**PCT/EP 99/08968**

IPC 7 C07F9/50 C07F9/53

**B. FIELDS SEARCHED**

IPC 7 C07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**Electronic data base consulted during the international search (name of data base and, where practical, search terms used)**

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

**Category \***

Citation of document, with indication, where appropriate, of the relevant passages

Relevant to claim No.

**X**

BANERJEE S ET AL: "SYNTHESIS OF A  
POLY(TEREPHTHALOYLPHOSPHINE)"  
ANGEWANDTE MAKROMOLEKULARE CHEMIE. APPLIED  
MACROMOLECULAR CHEMISTRY AND  
PHYSICS, DE, WILEY VCH, WEINHEIM,  
vol. 199, 1 August 1992 (1992-08-01),  
pages 1-6, XP000293980  
ISSN: 0003-3146  
cited in the application  
the whole document

**1-16**



Further documents are listed in the continuation of box C.

☒

Patent family members are listed in annex.

\* Special categories of cited documents :

"P" document published prior to the international filing date but later than the priority date claimed

"g" document member of the same patent family

Date of the actual completion of the international search

**25 February 2000**

Date of mailing of the International search report

**13/03/2000**

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer \_\_\_\_\_

**Beslier, L**

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 99/08968

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CASEY C.P.: "Synthesis of endo,endo-2,5-Bis((diphenylphosphino)methyl)bicyclo (2.2.1)heptane, a chelating diphosphine with a natural bite angle of 120°" JOURNAL OF ORGANIC CHEMISTRY., vol. 55, no. 4, - 16 February 1990 (1990-02-16) pages 1394-1396, XP002130765 AMERICAN CHEMICAL SOCIETY. EASTON., US ISSN: 0022-3263 page 1395, right-hand column, under _____	1-16
X	EP 0 040 721 A (BASF AG) 2 December 1981 (1981-12-02) cited in the application page 6,7 and examples _____	1-16
X	GB 2 259 704 A (CIBA-GEIGY AG) 24 March 1993 (1993-03-24) cited in the application examples _____	1-16
X	WO 96 07662 A (CIBA-GEIGY AG) 14 March 1996 (1996-03-14) pages 6,7 and examples _____	1-16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/08968

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 40721	A	02-12-1981	DE 3020092 A	10-12-1981
			JP 1586065 C	31-10-1990
			JP 2009596 B	02-03-1990
			JP 57021395 A	04-02-1982
GB 2259704	A	24-03-1993	CH 682666 A	29-10-1993
			AT 401265 B	25-07-1996
			AT 188592 A	15-12-1995
			AU 655675 B	05-01-1995
			AU 2525192 A	01-04-1993
			BE 1006011 A	19-04-1994
			CA 2078722 A	24-03-1993
			DE 4231579 A	25-03-1993
			ES 2050607 A	16-05-1994
			FR 2681599 A	26-03-1993
			HK 1000208 A	06-02-1998
			IT 1255509 B	09-11-1995
			JP 5345790 A	27-12-1993
			MX 9205345 A	01-04-1993
			NL 9201641 A	16-04-1993
			SE 503060 C	18-03-1996
			SE 9202668 A	24-03-1993
			SE 509829 C	08-03-1999
			SE 9501365 A	12-04-1995
			RU 2091385 C	27-09-1997
			US 5472992 A	05-12-1995
			US 5399770 A	21-03-1995
			ZA 9207226 A	23-03-1993
WO 9607662	A	14-03-1996	AU 682793 B	16-10-1997
			AU 3473995 A	27-03-1996
			CA 2197787 A	14-03-1996
			DE 69506886 D	04-02-1999
			DE 69506886 T	29-07-1999
			EP 0779891 A	25-06-1997
			JP 10505352 T	26-05-1998
			US 5721292 A	24-02-1998
			ZA 9507514 A	28-03-1996



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b>  <b>C07F 9/50, 9/53</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/32612</b>  <b>(43) International Publication Date:</b> 8 June 2000 (08.06.00)
<b>(21) International Application Number:</b> PCT/EP99/08968  <b>(22) International Filing Date:</b> 20 November 1999 (20.11.99)  <b>(30) Priority Data:</b> 2376/98                      30 November 1998 (30.11.98)    CH 2434/98                      8 December 1998 (08.12.98)     CH  <b>(71) Applicant (for all designated States except US):</b> CIBA SPECIALTY CHEMICALS HOLDING INC. [CH/CH]; Klybeckstrasse 141, CH-4057 Basel (CH).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> LEPPARD, David, George [CH/CH]; Route de Bourguillon 6, CH-1723 Marly (CH). EICHENBERGER, Eugen [CH/CH]; Schützenmattstrasse 5, CH-4051 Basel (CH). KAESER, René [CH/CH]; Stadtgasse 2, CH-1718 Rechthalten (CH). HUG, Gebhard [CH/CH]; Buchenweg 30, CH-4310 Rheinfelden (CH). SCHWENDIMANN, Urs [CH/ES]; Carreres Putxet 3, Vivienda 2, E-07590 Cala Ratjada, Baleares Mallorca (ES).  <b>(74) Common Representative:</b> CIBA SPECIALTY CHEMICALS HOLDING INC.; Patentabteilung, Klybeckstrasse 141, CH-4057 Basel (CH).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> PROCESS FOR PREPARING ACYLPHOSPHINES AND DERIVATIVES  <b>(57) Abstract</b>  <p>A description is given of processes for the preparation of mono- and bisacylphosphines and of mono- and bisacylphosphine oxides and mono- and bisacylphosphine sulfides, which comprises first reacting organic P-monohalogenophosphines or P,P-dihalogenophosphines, or mixtures thereof, with an alkali metal or magnesium in combination with lithium, where appropriate in the presence of a catalyst, and then carrying out the reaction with acid halides and, in the case of the process for the preparation of oxides, carrying out an oxidation step and, in the case of the preparation of sulfides, reacting the phosphines so obtained with sulfur. It is characteristic, inter alia, that the processes are carried out without isolation of the intermediates.</p>		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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